

We claim

1. A method for preserving and/or storing microorganisms which exhibit at least one nitrile hydratase or nitrilase enzyme activity, with the preservation and/or storage being effected in an aqueous medium which comprises at least one aldehyde, with the total aldehyde concentration being in the range from 0.1 to 100 mM/l.
2. A method according to claim 1, wherein the preservation step is carried out before the cells are treated with a reactant whose reaction is to be catalyzed by the cells.
3. A method according to claim 1 or 2, wherein the aqueous medium comprises a total concentration of cyanide compounds, selected from the group consisting of nitriles, hydrocyanic acid and cyanide salts, which is at most 10 mol% of the total aldehyde concentration.
4. A method according to one of claims 1 to 3, wherein the aldehyde is described by the formula III



where  $\text{R}^6$  can be substituted or unsubstituted, branched or unbranched, C1-C10-alkyl or C2-C10-alkenyl or substituted or unsubstituted aryl or hetaryl.

5. A method according to one of claims 1 to 4, wherein the aldehyde is selected from the group comprising unsubstituted benzaldehyde and substituted benzaldehydes.
6. A method according to one of claims 1 to 5, wherein the microorganism is selected from the species of the Enterobacteriaceae or Nocardiaceae family.

2 Figures + Sequ.

7. A method according to one of claims 1 to 6, wherein the microorganism is selected from the group of the species *Pseudomonas*, *Burkholderia*, *Nocardia*, *Acetobacter*, *Gluconobacter*, *Corynebacterium*, *Brevibacterium*, *Bacillus*,  
5 *Clostridium*, *Cyanobacter*, *Staphylococcus*, *Aerobacter*, *Alcaligenes*, *Rhodococcus* and *Penicillium*.
8. A method according to one of claims 1 to 7, wherein the method is combined with at least one further method for  
10 stabilizing, preserving and/or storing enzymes, with said methods being selected from the group consisting of:
  - a) adding at least one inorganic salt at a concentration of at least 100 mM;  
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  - b) adding metal salts whose metal cation functions as a nitrilase and/or nitrile hydratase prosthetic group;
  - c) adding nitriles and/or amides.  
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9. A preparation of microorganisms which exhibit at least one nitrile hydratase or nitrilase enzyme activity, with the preparation comprising
  - 25 a) at least one aldehyde having a total aldehyde concentration in the range from 0.1 to 100 mM/l, and
  - b) cyanide compounds, selected from the group consisting of nitriles, hydrocyanic acid and cyanide salts, at a total  
30 concentration which is at most 10 mol% of the total aldehyde concentration.
10. A preparation of microorganisms according to claim 9, wherein said preparation does not comprise any additions of cyanide  
35 compounds.
11. The use of a preparation of microorganisms according to claim 9 or 10 for producing foodstuffs, feedstuffs, pharmaceuticals or fine chemicals.  
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12. A method for preparing recombinant proteins, enzymes or fine chemicals using a preparation of microorganisms according to claim 9 or 10 or a preparations thereof.
- 45 13. A method for preparing carboxylic acids and/or amides, comprising the following steps:

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- a) culturing a microorganism which exhibits at least one nitrile hydratase or nitrilase enzyme activity,
- 5 b) adding at least one aldehyde, with the total aldehyde concentration being in the range from 0.1 to 100 mM/l,
- 10 c) bringing the aldehyde-treated preparation of said microorganisms into contact with at least one nitrile and converting said nitrile into a carboxylic acid and/or an amide.

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Method for preserving and/or storing cells which possess nitrilase or nitrile hydratase activity

#### 5 Abstract

The invention relates to a method for preserving and/or storing microorganisms which exhibit at least one nitrile hydratase or nitrilase enzyme activity, with the preservation and/or storage  
10 being effected in an aqueous medium which comprises at least one aldehyde, with the total aldehyde concentration being in a range from 0.1 to 100 mM/l.

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